

Low-Loss Ferrite Components for NASA Missions, Phase II

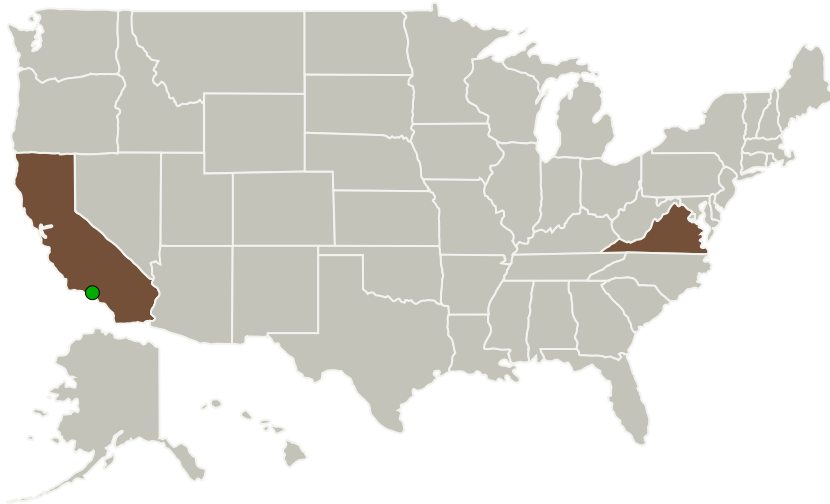
Completed Technology Project (2016 - 2018)




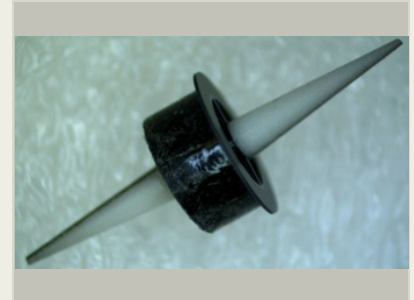
Project Introduction

The goal of this research is to develop high-frequency Faraday rotation isolators that exhibit significantly reduced loss, higher power handling and improved bandwidth over commercially available products. The bandwidth limitations of high-frequency circulators will be explored. It was demonstrated in the Phase I work that the bandwidth of these components can be substantially increased through impedance matching techniques. At the end of the Phase II program, Micro Harmonics will have developed a full line of isolators operating in bands from WR-12 through WR-3 and circulators working in bands from WR-15 through WR-5. In the phase I work our models were proven to be accurate. The approach is fundamentally sound, but there are significant technical challenges. These components will find immediate use in a broad range of systems used by NASA as well as the commercial sector.

Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
Micro Harmonics Corporation	Lead Organization	Industry	Fincastle, Virginia
 Jet Propulsion Laboratory(JPL)	Supporting Organization	NASA Center	Pasadena, California



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Table of Contents

Project Introduction	1
Primary U.S. Work Locations and Key Partners	1
Project Transitions	2
Images	2
Organizational Responsibility	2
Project Management	2
Technology Maturity (TRL)	3
Technology Areas	3
Target Destinations	3

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Primary U.S. Work Locations

California

Virginia

Project Transitions



April 2016: Project Start



April 2018: Closed out

Closeout Documentation:

- Final Summary Chart(<https://techport.nasa.gov/file/139597>)

Images



Briefing Chart Image

Low-Loss Ferrite Components for
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(<https://techport.nasa.gov/image/136955>)

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission
Directorate (STMD)

Lead Organization:

Micro Harmonics Corporation

Responsible Program:

Small Business Innovation
Research/Small Business Tech
Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Principal Investigator:

David W Porterfield

Co-Investigator:

David M Porterfield

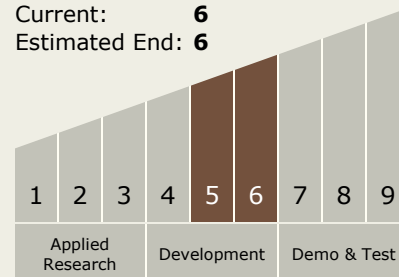
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Technology Maturity (TRL)

Start: **5**
Current: **6**
Estimated End: **6**



Technology Areas

Primary:

- TX08 Sensors and Instruments
 - └ TX08.1 Remote Sensing Instruments/Sensors
 - └ TX08.1.4 Microwave, Millimeter-, and Submillimeter-Waves

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System